

MUSICAS

Méthodologie Unifiée pour la Simulation de l'Intégrité et de la Contrôlabilité des Assemblages Soudés



The main goal of MUSICAS is to demonstrate that the rational integration of existing software in a business infrastructure, complemented by a limited multiphysics modelling R&D of the welding process, can consider automating processes corresponding to the effective methodologies in the industry.

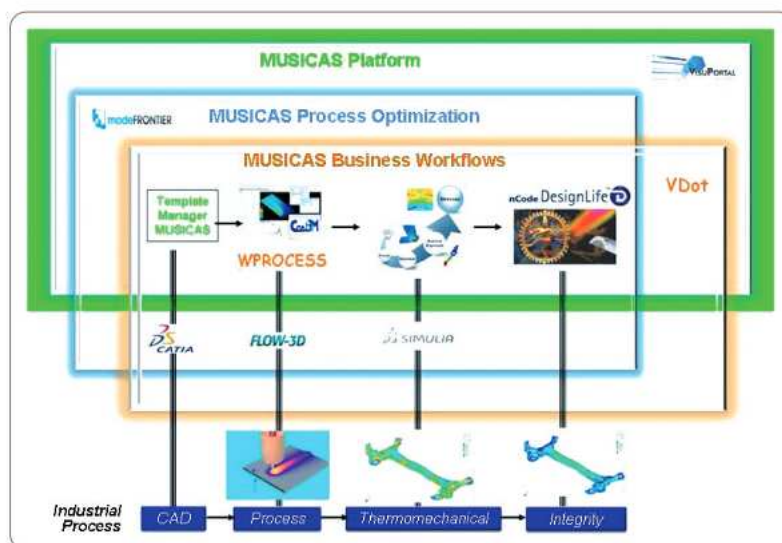
The project's objective is to achieve and qualify a precompetitive demonstrator of a consistent and scalable solution including:

- complete modelling chain from process parameters (from the soldering bath to the assemblies),
- prototyping of associated services: methodological guides, best practice and operating in the HPC cloud,
- characterization criteria for commercial deployment in a service, exploitable in the design, sizing and R&D, from the detailed analysis to the modelling process as a whole and the behaviour of the resulting assemblies.

TECHNOLOGICAL OR SCIENTIFIC INNOVATIONS

The main technological leap is to integrate multiphysics simulation of welding processes upstream of thermomechanical numerical codes (for the prediction of residual stresses) to conduct an analysis of the operating performance of the welded assembly. Another challenge is to bring the welding numerical simulation in enterprise from non-expert users with reasonable calculation costs. The transition from the proof of concept stage to pre-competitive application involves the removal of four locks:

- fine multiphysics modelling of all welding processes features with acceptable calculation costs,
- extraction of useful information about the microstructure after welding for Non Destructive Testing simulation,
- effectiveness of the software integration and optimization loops without a priori interchange formats,
- effective transfer of fine information obtained from the parameters of the process, up to multiphysics modelling tools for life analysis.



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PROJECT DATA

Coordinator:
BERTIN TECHNOLOGIES

Co-label:
EMC2, PNB

Call:
FUI14

Start date:
January 2013

Duration:
36 months

Global budget (M€):
6.1

Funding (M€):
2.2